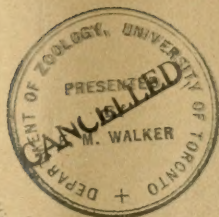


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# Journal of Entomology and Zoology

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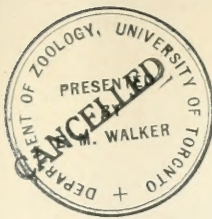
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THE JOURNAL OF ENTOMOLOGY AND ZOOLOGY

William A. Hilton, Editor

Claremont, California, U. S. A.





## New Californian Spiders

RALPH V. CHAMBERLIN

The new spiders described below were found recently while identifying a collection from Claremont received from Prof. Hilton and one made by the writer in the same region in 1909 and 1913. A few forms from other localities noted in making comparisons are also included.

### AVICULARIIDAE

#### *Hexura fulva* sp. nov.

Carapace and sternum with labium and endites yellow of light reddish cast, unmarked excepting for the solid black interocular area. Legs pale yellowish brown without the reddish tinge. Chelicerae typically a little darker than the carapace. Abdomen grey above and either wholly unmarked or sometimes showing a short median longitudinal pale line at base; venter paler excepting toward the spinnerets, where darkened; spinnerets pale brown like the legs. Chelicerae long, clothed above on mesal portion with long setae which are more abundant on the anterior face below. Anterior lateral eyes much the largest, less than their long diameter apart, scarcely three times the diameter of the medians. Anterior median eyes about their radius apart, between two-thirds and three-fourths the diameter of the posterior medians, which are smaller than the posterior laterals. Tibiae I and II armed beneath with 3-1-1 spines, the two unseries spines being at distal end. Metatarsi I and II armed beneath with 3-3 spines. Spinnerets with articles proportioned much as in *picea*, the terminal article being pointed and subannulate, but the length rather shorter than the width of the abdomen and much shorter than its length.

Length, 9 mm. Length of cephalothorax, 4 mm. Length of tib. + pat. I, 3 mm.; of tib. + pat. IV, 3.2 mm.

Type—M. C. Z. 380. Claremont.

A much lighter colored species than *picea*, the genotype, and differing in the much shorter spinnerets, in having 3-3 spines instead of 2-2 below on metatarsus I, in having the anterior lateral eyes scarcely three times instead of more than four times the diameter of an anterior median, in the proportionately broader endites, etc.

#### *Nemesoides* gen. nov.

Pars cephalica of moderate size. Fovea thoracica moderate, recurved. Anterior row of eyes procurved, median eyes much smaller than the laterals. Laterel eyes on each side less than their radius apart, the anterior scarcely larger than the posterior. Rastellum of chelicerae well developed, the teeth long and stout. The labium broader than long, unspined. Endites armed at base with a patch of slender spines. Sternum with a pair of large impressions united at middle and in transverse line with them, near, but separated from, each lateral margin a much smaller impression. Tarsal claws with teeth numerous, in two sinuous series. Tarsi and, in part, metatarsi of first two pairs of legs scopulate. Tarsi of last two pairs of legs spined (male, genotype.) Metatarsus IV shorter than tibia IV. Superior spinnerets large, four-jointed, the distal joint short, rounded, shorter than the third and much shorter than the second. Tibia I of male with spur.

Genotype—*N. hespera* sp. nov.

This genus falls in Simon's group *Nemesiæ* in its more restricted sense.

*Nemesoides hespera* sp. nov.

*Male*—Carapace, sternum, labium and endites and legs yellowish. Chelicerae darkened distad by the black teeth of the rastellum. Abdomen yellowish beneath; light brown above, with three longitudinal rows of short, black, transverse marks. Chelicerae long and rather slender, extending almost directly forward, not at all geniculate, the lower teeth of rastellum stout. Anterior row of eyes procurved in such manner that the line tangent to the lower edges of the median eyes passes through or near the centers of the laterals; lateral eyes with diameter twice that of the medians; median eyes their diameter apart. Anterior and posterior lateral eyes equal or very nearly so, separated by less than half their radius. Posterior median eyes nearly of same size as the anterior medians from which separated by their radius, closer to the posterior laterals. Tibia I in male with spur or process; strongly spined; a series of long, stout spines along each side, fewer smaller ones beneath, typically a short, oblique row of four close-set and especially stout spines at the ectoventral corner of the distal end. Metatarsus I with a strong angle, or process, at middle of the ventral edge. Palpal organ as shown in pl. 1, fig. 1.

Length, 10 mm. Length of cephalothorax, 5 mm. Length of tib. + pat., 1.5 mm.; of tib. + pat. IV, 5.5 mm.

Type M. C. Z. 379. Claremont. Wm. A. Hilton coll.

## DICTYNIDÆ

*Amaurobius nigrellus* sp. nov.

*Female*—Carapace dusky chestnut to nearly black. Sternum solid black. Labium and endites black or blackish excepting across tips. Legs dusky brown, the femora darker, blackish. Abdomen above and laterally blackish brown, the background black lightened by numerous minute yellowish dots; venter mesally immaculate black. Anterior median eyes their diameter apart, once and a half as far from the laterals. Posterior row of eyes but little longer than the anterior; median eyes nearly twice their diameter apart, and almost two and a half times their diameter from the laterals. Area of median eyes wider behind than in front and longer than wide. Tibia I unarmed. Anterior metatarsi well spined beneath. Tibia IV with four spines beneath, these in a longitudinal line with an extra one at distal end. Tibiæ III and IV with a small spine at the base above, in this differing from the other known North American species. Lower margin of furrow of chelicerae armed with two teeth. Epigynum a plate subcordate in outline with a median longitudinal band extended laterad on each side behind.

Length 6 mm. Length of tib. + pat. I, 3 mm.; of tib. + pat. IV, the same.

Type—M. C. Z., 374. Cal., Claremont. Prof. Wm. A. Hilton.

*Parauximus* gen. nov.

Resembles Auximus in eye characters, but eyes of both rows nearly equidistant. It differs in having the lower margin of the furrow of the chelicerae armed with eight teeth, instead of four or five, of which the most distal instead of the most proximal is largest; upper furrow with three teeth of which the median is largest. A notable feature of the genus is that the patella of the male palpus, at least in the genotype, bears a stout apophysis.

*Genotype*—*P. tardatus* sp. nov.



*Parauximus tardatus* sp. nov.

*Male*—Carapace dusky over light brown. Legs with somewhat obscure dusky annuli over yellow. Labium and endites chestnut, pale across tips. Chelicerae dusky chestnut. Abdomen dark over sides, dorsally a pointed mark outlined in black from base to middle, followed by a series of mesally connected chevron marks. Venter immaculate light grey with an angular extension from the dark of each side just in front of the spinnerets, the two processes not meeting in the middle line. Lower margin of the furrow of the chelicerae bearing four large teeth and proximad of these four smaller ones. Anterior median eyes very small, rather less than half the diameter of the laterals, near their diameter apart and about the same distance from the laterals. Posterior row of eyes straight; median eyes smaller than the laterals. About their diameter apart and the same distance or a little less from the laterals. Anterior laterals larger than posterior laterals and separated from them by about a radius of the latter. Tibiæ and metatarsi I and II armed beneath with three pairs of spines.

Palpus as shown in plate 1, fig. 2. Patella with a stout apophysis bearing distally numerous spines.

Type—M. C. Z. 377. Claremont.

Readily distinguishable by the characters of the eyes and the structure of the male palpus.

*Auximus pallescens* sp. nov.

*Female*—A species in appearance much resembling the preceding, though typically paler with the carapace and legs much more yellow. Sternum yellow. Labium chestnut, pale across tip, the endites lighter; also distally pale. Abdomen colored somewhat similarly to that of the preceding species, but the dorsal markings in the type indistinct. The species is easily distinguished from the preceding by its much larger anterior median eyes, which equal or nearly equal the laterals and obviously exceed the posterior medians and which are separated from each other by rather less than their radius and from the laterals by not more than once and a half their diameter. Posterior median eyes separated by near once and two-thirds their diameter and from the laterals by twice and a half their diameter, the laterals much larger. Lateral eyes on each side separated by their radius or less. Lower margin of furrow of chelicera armed with four teeth. Tibiæ I and II and metatarsi I and II each armed beneath with three pairs of spines. Epigynum, apparently not quite fully chitinized, shown in plate 1, fig. 3.

Length 12.5 mm. Length of cephalothorax, 6 mm. Length of tib.+pat. I, 5.7 mm.; of tib.+pat. IV, the same.

Type—M. C. Z. 376. Wm. A. Hilton coll.

*Auximus latescens* sp. nov.

*Female*—Carapace pale chestnut tending to testaceous in posterior and lateral regions. Legs testaceous to brown, the anterior ones often of slight chestnut cast. Sternum pale chestnut and the endites and labium darker chestnut. Chelicera dark chestnut or mahogany. The abdomen above is dark brown to blackish, with a posteriorly pointed pale mark reaching from base to middle followed by a series of pale chevron marks and on each side of it with usually three pale spots, which may be more or less connected with it or sometimes a short light line each side; venter grey-

ish brown to yellowish with two rather wide longitudinal dark stripes which are but narrowly separated on each side from the dark of the sides. Anterior lateral eyes with diameter once and two-thirds that of the medians; median eyes about five-sixths their diameter apart, twice and a half their diameter from the laterals. Lower margin of furrow of chelicera with four teeth, of which the most proximal is largest. Tibiæ I and II armed with five spines, one at base, two sub-median and two apical. Epigynum as shown in plate 1, fig. 4.

*Male*—Carapace and legs somewhat paler than in the female. Eyes less widely separated. Palpal organs as represented in plate 1, fig. 5.

Type—M. C. Z. 372. Cal.: Claremont. Type taken by the author in 1909. Paratypes take in 1913. Also in 1918 coll. of Prof. Hilton.

The genus to which this and the preceding species belong, known from South America and the Atlantic Islands, has not previously been recorded from North America.

*Dictyna mians* sp. nov.

*Female*—Pars cephalica yellowish, other parts of carapace brown to fuscous. Sternum yellowish, sometimes a little dusky, with the labium similar, but endites ordinarily paler. Legs not annulate in the types though the femora may be slightly darkened and the tibia and metatarsus show vague darkening at distal end. Abdomen above yellowish, with a dark spot in front of middle from which some fine dark lines radiate and anastomose to form a network, the median longitudinal line the best developed of these; typically three pairs of widely separated dark spots on posterior portion, but these often broken or indistinct. Venter darker, sometimes a median yellow spot in front of the cribellum with one in each edge of dark area. Anterior row of eyes straight; median eyes their diameter or a little more from the laterals, farther from each other. Posterior eyes nearly equidistant. Area of median eyes wider behind than in front. Epigynum, plate 3, fig. 8.

Type—M. C. Z. 385.

Cal.: Los Angeles Co. (R. V. Chamberlin); also northern part of state (Peckham coll.).

Has resemblance to *P. calcarata*, occurring in the same localities, but easily distinguished by the structure of the epigynum and the more widely separated eyes.

SCYTODIDÆ

*Plectreureys suprenans* sp. nov.

*Female*—Differs at sight from *P. castanea* Simon, which occurs in the same region, in its much longer legs, lighter, more dilute chestnut, carapace, and the proportionately shorter and higher abdomen. The legs are brown, of less chestnut cast, with the first ones not contrasting by deeper, fuscous color. Sternum pale chestnut like the carapace. Abdomen cinereous of slight greenish cast, with pale median mark on dorsum at base. The anterior row of eyes is longer than in *castanea* with the lateral eyes comparatively smaller, their diameter not exceeding once and a half that of the medians; median eyes about their radius apart, much farther removed from the laterals than in *castanea*, the distance being from two and a half to three times their diameter. Posterior row of eyes distinctly a little recurved instead of straight, with the median eyes larger than the laterals instead of a little smaller,



separated by their longer diameter or more, a little nearer to the laterals. The trapezium of median eyes is much wider in proportion to the length than in *castanea*. Tibia I with five to seven long, widely separated spines on ventral side, of which none are paired or, rarely, eight present with two at distal end. Spines under metatarsus I shorter, very numerous.

*Male*—Tibia I of palpus without apophysis at distal end. Palpus represented in plate 2, fig. 1.

Length of female, 11 mm. Length of cephalothorax, 5 mm. Length of tibia + pat. I, 6.4 mm.; of tib. + pat. IV, 4.7 mm.

Type—M. C. Z. 368. Cal.: Los Angeles, Claremont. R. V. Chamberlin coll., 1909. Wm. A. Hilton coll, 1918.

#### DRASSIDÆ

##### *Drassodes celes* sp. nov.

*Female*—Carapace and sternum with endites and labium testaceous, and legs yellow. Chelicerae darker brown or pale chestnut. Abdomen ventrally clear yellow in front of the genital furrow excepting the dark epigynal area; behind the furrow dusky grey over a yellow background; dorsally dark olive grey due to dense clothing of hair. Upper margin of furrow of chelicera with three teeth of which the median is largest; lower margin with two small teeth. Anterior row of eyes rather strongly procurved; median eyes a little more than their diameter apart and a little more than their radius from the laterals, which are nearly their diameter from lower edge of clypeus. Posterior row of eyes scarcely procurved, much longer than the anterior row; lateral eyes smaller than the anterior laterals from which separated by once and a half the diameter of the latter; median eyes oblique, scarcely more than their long radius apart, twice their long diameter and nearly three times their lesser diameter from the smaller laterals. Tibiæ I and II armed beneath with but a single spine, which is attached a little distad of middle and toward the mesal side. Metatarsi I and II with a single spine beneath, this at base. All tarsi scopulate. Anterior metatarsi, and metatarsus III at distal end also, scopulate. Epigynum represented in pl. 2 f. 2.

Length, 10 mm. Length of cephalothorax, 4.5 mm. Length of tib. + pat. I, 4.5 mm.; of tib. + pat. IV, 5 mm.

Type—M. C. Z. 360. Cal.: Claremont. Wm. A. Hilton.

An obviously larger species than *D. robustus* which has a very different epigynum and bears no spine under tibia I. Only the male of *D. californicus* is known; but this may be distinguished from the present species by its different eye relations; e. g., in having the posterior laterals larger than the medians and the latter farther apart. It also has two pairs of spines under tibia, I which may not be a secondary character.

##### *Scotophaeus voluntarius* sp. nov.

*Female*—Carapace, sternum and legs pale chestnut, the posterior legs and the coxæ beneath more brown and the anterior legs dusky or blackish beyond the femora. Endites like sternum, the labium and chelicera a darker chestnut. Abdomen blackish grey above and laterally, with a faintly indicated pale mark at base above; venter yellow in front of genital furrow and dusky greyish yellow behind it, with a pair of interrupted longitudinal dark lines. Epigynum blackish. Furrows of chelicerae unarmed. Anterior row of eyes procurved; median eyes between one-half and three-

fourths their diameter apart, only about one-eighth their diameter from the much smaller lateral eyes and less than their diameter from the lower edge of clypeus. Posterior row of eyes a little longer than the anterior, a little procurved; median eyes their diameter or scarcely more apart, closer to the laterals. All tarsi with well developed scopulæ and the anterior metatarsi also scopulate. Tibiæ I and II each with a single spine at distal end beneath and metatarsi I and II each with one at base beneath. For form of epigynum see pl. 2, f. 3.

Length 8.5 mm. Length of cephalothorax 4 mm. Length of tib. + pat. I, 3 mm.; of tib. + pat. IV, 3, 1 mm.

Type—M. C. Z. 361.

*Herpyllus pius* sp. nov.

*Female*—This large form in general appearance resembles *H. validus*, which is common in the same region; but, aside from readily noted differences in eyes and especially in the epigynum, it may easily be distinguished in having no spines beneath on tibia I, whereas *validus* has three spines as on tibia II, which is similarly armed in the present species. Carapace and legs pale chestnut. Sternum and endites similar but the labium and chelicerae darker. Abdomen grey, densely clothed with hair, as usual, the type not showing any definite markings. Hairs of plumose type, as usual. Posterior row of eyes considerably longer than the anterior, clearly procurved; median eyes circular, subequal to or scarcely smaller than the laterals, slightly more than their diameter apart and twice their diameter from the laterals. Anterior median eyes considerably larger than the laterals, their radius apart, closer to the laterals. Furrow of chelicerae armed above with three small teeth, below with one. For epigynum see pl. 2, f. 4.

Length, 11 mm. Length of cephalothorax, 5 mm. Length of tibia patella I, 4.5 mm.; of tib. + pat. IV, 5 mm.

Type—M. C. Z. 365.

Cal.: Claremont. R. V. Chamberlin coll., 1909.

*Zelotes taibo* sp. nov.

*Female*—Carapace and sternum reddish yellow, the legs yellow without the reddish cast. Endites like sternum, the labium and chelicerae darker. Abdomen grey without distinct markings. Posterior row of eyes distinctly longer than the anterior, a little procurved; median eyes elongate, elliptic, very oblique to each other, larger than the laterals, separated from each other by less than their radius, nearly their diameter from the laterals. Anterior median eyes smaller than the laterals, about their radius apart, not more than half as far from the laterals. Lateral eyes on each side separated by more than their radius but less than their diameter. Tibia I unarmed beneath, metatarsus I with a ventral spine at base. Tibia II beneath with a submedian spine, metatarsus II with a spine at base. Form of epigynum represented in pl. 2, f. 5.

Length, 6.5 mm. Length of cephalothorax, 2.9 mm. Length of tib. + pat. I, 1.4 mm.; of tib. + pat. IV, nearly the same or slightly less.

Type—M. C. Z. 367. Claremont.

*Zelotes irritans* sp. nov.

*Male*—Carapace, sternum, legs, and mouthparts dusky over a yellow background,



the anterior tibiae more blackish than the posterior. Abdomen greyish black. Posterior row of eyes but little longer than the anterior, slightly procurved; median eyes broadly slightly obovate, much larger than the laterals, separated from each other by less than their radius, twice as far from the laterals. Anterior median eyes very much smaller than the laterals, to which they are very close, separated from each other by their diameter. Tibia I armed beneath with a single submedian spine; tibia II armed beneath with three spines, two of these being submedian and at slightly different levels and one sub-basal. Palpus as shown in pl. 2, f. 6.

Length, 5.1 mm. Length of cephalothorax, 2.25 mm. Length of tib. + pat. I, 2.1 mm.; of tib. + pat. IV, 2.5 mm.

Type M. C. Z. 366. Claremont.

*Zelotes gynethus* sp. nov.

*Female*—A dark colored species having the general appearance of *Z. niger* but readily distinguishable in its smaller and very differently formed epigynum, etc., and from other species also by that character and those of the eyes. Carapace black of slight chestnut cast, shining. Legs dusky mahogany or the proximal joints, especially of the anterior pairs, solid black. Sternum dusky chestnut, the labium and endites similar. Abdomen greyish black above, paler beneath, without markings. Posterior row of eyes very slightly procurved, considerably longer than the anterior row; median eyes nearly their diameter from the laterals and a little nearer to each other. The anterior median eyes are characteristically very small, being greatly exceeded by the laterals from which separated by not more than half their radius, separated from each other by once and a half or more their diameter. No ventral spines on tibiae I and II or on corresponding metatarsi. For form of epigynum see pl. 3, f. 1.

Length, 8 mm. Length of cephalothorax, 3.1 mm. Length of tib. + pat. I, 2.9 mm.; of tib. + pat. IV, 3.4 mm.

Type—M. C. Z. 363. Cal.: Claremont.

*Zelotes ethops* sp. nov.

*Male*—Carapace and legs brownish yellow, the sternum clearer yellow. Labium darker than sternum, the endites like sternum. Chelicerae brown. Abdomen grey. The species seems readily distinguishable from those described previously from North America in the atypical character of the eyes and endites. The posterior row of eyes, which is straight, not at all longer than the anterior, the eyes all being close together, the medians but slightly separated and but little farther from the somewhat smaller laterals. The anterior row of eyes procurved with the laterals but little more than their radius removed from the edge of the clypeus; the median eyes, which are much smaller than the laterals, separated by but little more than their radius and much closer to the laterals. Lateral eyes on each side much nearer to each other than the medians, separated by less than their diameter. Chelicerae armed above with three small teeth, below with two. The endites are characterized by having the palpus inserted at or a little distad of the middle, obviously farther distad than usual. Tibia I and metatarsus I unarmed beneath; tibia II also unarmed beneath but metatarsus II with two spines in longitudinal line beneath, Anterior spinnerets large, much exceeding the posterior.

Length of not fully mature male type, 6 mm. Length of cephalothorax, 3.1 mm. Length of tib. + pat. IV, 3.4 mm.

Type M. C. Z. 362. Cal.: Claremont.

## PHOLCIDÆ

*Psilochorus californiæ* sp. nov.

Carapace, sternum, and legs yellow or the carapace and legs proximally of pale brown cast; the femora proximally and the patellæ and tibiæ at ends often tinged with bright red. The head and the furrows commonly darker than other parts of carapace, with the eyes enclosed in black. The abdomen to the naked eye appears grey, commonly of a greenish tinge; under the lens it shows on the sides numerous light, somewhat silvery, spots and above a basal pale mark, with several pairs of dark spots enclosed by the light ones and often more or less subdivided. Posterior row of eyes straight; the median eyes nearly their diameter apart, their radius or a little more from the anterior lateral eyes, and three-fourths their diameter from the anterior medians. Anterior eyes in a strongly procurved row, with the medians much the smaller, as usual. In the male the apophysis on the chelicera is attached near the middle of the anterior face and projects directly downward or a little forward of downward; it is smaller than in *cornutus* and differs also in position and form from that in *pullulus*. (Pl. 3, f. 2.) The species is most readily recognized by the structure of the male palpus, which is represented in pl. 3, f. 3.

Length (male), 3.2 mm. Length of femur I, 4.8 mm.; of femur IV, 3.8 mm.; of tib. + pat. I, 5 mm.; of tib. + pat. IV, 4 mm.

Type—M. C. Z. 370.

Cal.: Claremont. R. V. Chamberlin coll., 1909. Also Wm. A. Hilton coll., 1918.

## THERIDIIDÆ

*Lithyphantes mimoides* sp. nov.

*Female*—Carapace reddish brown or chestnut, darker on lower part of sides and with an obscure median longitudinal dorsal line on pars cephalica at least. Sternum chestnut, sometimes nearly black. Legs chestnut, with anterior tibiæ darker. Chelicerae, labium and endites darker, almost mahogany. Abdomen in general silvery white, with a close network of fine brown lines; dorsum typically with four pairs of dark spots of which the most caudal are united; a narrow, brown hastate mark along middle, a brown stripe on anterior face and extending caudad along each side where it bifurcates, a series of oblique lines uniting the two branches in the caudal region; venter covered with a network of dark lines and spots. Anterior row of eyes nearly straight or slightly procurved. Anterior median eyes smaller than the laterals, their diameter or more apart and slightly farther from the laterals. Lateral eyes on each side narrowly separated, obviously closer to each other than in *corollatus*, equal. Posterior row of eyes slightly procurved. Posterior median eyes their diameter apart, nearly twice as far from the equal laterals. The species is easily separable from *L. corollatus*, which it superficially resembles, by the strongly different form of the epigynum as well as by the difference in eye arrangement noted above. See pl. 3, f. 4.

Length, 7.5 mm. Length of cephalothorax, 2.9 mm. Length of tib. + pat. I, 3.4 mm.; of tib. + pat. IV, 3.2 mm.

Type—M. C. Z. 340. Oregon: Portland. S. Henshaw coll., June 19, 1882.

## ARGIOPIDÆ

*Aranea gosogana* sp. nov.

*Female*—This species falls in the group with longitudinal thoracic furrow, the



anterior femora armed beneath with a double series of numerous stout spines, and the abdomen broadly triangular-oval in outline (*Neoscona* in part.) In coloration it differs from *A. utahana* Chamb., e. g., in having the anterior tibiae and metatarsi only biannulate instead of triannulate, the median annulus being absent, while the femora have an annulus only at the distal end. In the type the carapace is somewhat darkened in a median longitudinal stripe and may have been blackish in life. Thorax blackish at sides. Abdomen in general light yellowish; on posterior portion above a black line with posterior end bifurcating, and a black line on each side also running caudad from anterior end of the median line; on sides a series of brownish, parallel, subvertical lines; venter not unusually black as it is in *utahana*. The scape of the epigynum instead of curving evenly with convexity ventrad, is straight to the distal end which is bent abruptly ventrad instead of curving dorsad as in *vertebrata*. This bending may in part be an artifact as the abdomen in the type was shrunken firmly against the end of the scape. See pl. 6, f. 6.

Length, 14 mm. Length of abdomen, 11.5 mm.; width, 9.6 mm. Length of cephalothorax, 6.6 mm. Length of tib. + pat. I, 7.2 mm.; of tib. + pat. IV, 6.5 mm.

Type—M. C. Z. 388. Cal.: Desert region.

#### THOMISIDÆ

##### *Thanatus retentus* sp. nov.

*Female*—Carapace with a chocolate colored band on each side above a pale marginal stripe, with a broad median dorsal pale stripe embracing typically a darker median longitudinal mark which bifurcates at the posterior border of head and is continued forward as interrupted dark lines, a median dark line also present between these branches. Lower median region of clypeus pale. Sternum yellow, densely dotted over borders, or sometimes over entire surface, with minute dark spots. Legs brown, lined and mottled with black, the joints showing some clearer longitudinal lines particularly on the femora. Abdomen above yellowish with a dark colored basal sagittate mark reaching to middle or indistinctly continued beyond in an interrupted median line; on posterior region a dark area showing several chevron marks united on each side in a line or band with wavy exterior edge; typically the venter shows two narrowly separated median black lines united in an acute angle in front of spinnerets and ectad of this on each side another dark line. Posterior row of eyes strongly recurved, as usual, the median eyes scarcely nearer to each other than to the laterals (cir. 14:15). Area of median eyes narrower in front than behind, longer than wide in about ratio 20:17. Anterior medians twice as far from each other as from the laterals. Epigynum as shown in pl. 6, f. 5.

Type—M. C. Z. 389.

Claremont. A common species in this region.

This form is readily distinguishable from *coloradensis*, with which it has heretofore been confused, by the obviously different form of the epigynum.

#### AGELENIDÆ

##### *Agelena rua* sp. nov.

*Male*—Carapace with the sides dark, as usual, the median band yellow. Sternum dusky over yellow with a clear median longitudinal line. Legs light yellow, obscurely

annulate with dark. Chelicerae pale brown. Dorsum of abdomen dark grey along sides, the median region light reddish with a series of yellow spots along each edge; sides of abdomen yellowish grey lightly spotted with black; venter limited on each side by a longitudinal dark line, the intervening region almost immaculate. Posterior eyes equidistant, not fully their diameter apart. Anterior median eyes much smaller than the laterals, near their radius apart, a little nearer to the laterals. Palpal organ represented in pl. 4, f. 1.

Length, 7 mm. Length of cephalothorax, 3.2 mm. Length of tib. + pat. I, 4.5 mm.; of tib. + pat. IV, 4.7 mm.

Type—M. C. Z. 384. California: Catalina Id.: Avalon Bay. Wm. A. Hilton coll., Aug. 25, 1918.

Distinct from other North American species especially in the structure of the male palpus.

#### CLUBIONIDÆ

*Olios schistus* sp. nov.

A species approaching *O. peninsulanus*, known from Lower California, but differing in coloration and various details of structure. While in *peninsulanus* the carapace, labium, endites, chelicerae and legs are uniformly immaculate pale yellow, in the present species the legs are darkened by numerous minute, dark, somewhat purplish, spots which show a tendency to condense into an irregularly defined annulus at proximal end of tibiae; similar but fewer dots occur on carapace and chelicerae, but the sternum is immaculate. Abdomen also very obviously darker and differently marked, being densely spotted and streaked on the sides with blackish and less strongly so above and below, the dorsum with a clear sagittate mark at base, followed by a series of short chevron marks united along middle by a black line which is furcate at its anterior end. Anterior eyes obviously larger than the posteriors; anterior median eyes their diameter from the laterals and a little farther from each other, the eyes being more widely separated than in *peninsulanus*. Posterior rows of eyes a little procurved instead of straight, and the eyes much more widely separated than in the species mentioned, the medians being three times their diameter apart and as far or nearly as far from the laterals. Epigynum decidedly larger proportionately, with the outer ridges posteriorly more thickened and elevated with reference to the inner rims, etc. See pl. 4, f. 2. The palpal organ of male of similar structure but obviously heavier; the proximal apophysis of tibia larger, distally clavately expanded and truncate instead of being distally pointed with the setose edge long and oblique; the anterior apophysis also differing as shown in pl. 4, f. 3.

Length of female, 10.5 mm. Length of cephalothorax, 4.8 mm. Length of tib. + pat. I, 6.8 mm.; of tib. + pat. IV, 6 mm. A male with cephalothorax 4.8 mm. long has tib. + pat. I, 8 mm. and tib. + pat. IV, 6 mm. long.

Type—M. C. Z. 354.

Cal.: Claremont. R. V. Chamberlin coll. Also Wm. A. Hilton 1918 coll.

*Anyphaena crebrispina* sp. nov.

*Male*—Carapace and legs dull yellow, a dusky band along upper part of each side of the former. Sternum, labium and endites also yellow, the chelicerae brown. Abdomen dull grey of slight yellow cast; dorsum with a few dark spots, the sides with more numerous dark spots and streaks; venter with some spots on posterior portion,



dusky in front of genital furrow. Armature of chelicerae normal. Anterior row of eyes straight; eyes less than their diameter from lower margin of clypeus. Anterior median eyes obviously smaller than the laterals, rather less than their radius apart, closer to the laterals. The lateral eyes on each side their radius apart. Tibiæ I and II armed beneath with three pairs of long spines, the corresponding metatarsi with two pairs. Coxæ of third and fourth and femora of third legs densely spinulose beneath. Furrow of posterior spiracles a little behind middle of abdomen. Palpus pl. 4, f. 4.

Length, 5 mm. Length of cephalothorax, 2.5 mm. Length of tib. + pat., 2.6 mm.; of tib. + pat. IV, the same or nearly so.

Type—M. C. Z. 353. Cal.: Claremont. Pomona College coll.

*Anyphæna ruens* sp. nov.

*Male*—Carapace and legs yellowish, the legs with some obscure dusky markings. Sternum, labium and endites yellow. Abdomen yellowish grey; immaculate beneath; streaked and spotted with brown over the sides and the lateral portion of the dorsum; dorsum posteriorly with two or three rows of spots more or less confluent into chevrons, preceded by a pair of spots, the anterior median region of dorsum immaculate. Armature of chelicerae typical. Clypeus not quite as wide as diameter of anterior eyes. Anterior row of eyes straight. Anterior median eyes a little smaller than the laterals, their radius apart, much closer to the laterals. Posterior eyes equal, obviously longer than the anterior ones, the row very slightly procurved. Posterior median eyes their diameter or slightly farther apart. The eyes in general closer together than in *incursa*, those of which they somewhat suggest. Tibiæ I and II armed beneath with two pairs of spines—one pair basal and one submedian—and metatarsi I and II similarly armed, the spines in length from about once and a half to twice the diameter of the joint. Furrow of posterior spiracle rather behind middle of abdomen. Palpus as shown in pl. 5, f. 1.

Type—M. C. Z. 352. Cal.: Claremont. R. V. Chamberlin coll.

*Anyphæna zina* sp. nov.

*Female*—Carapace yellow, somewhat darker on the sides, as usual. Legs yellow, marked with a few much interrupted and often obscure annuli, the femora beneath with a longitudinal row of black dots. Sternum, labium and endites yellow. Chelicerae brown. Abdomen yellowish grey; minutely spotted with dark above and over the sides; venter mostly nearly free from spots, but with a dark line from epigynum to furrow of posterior spiracle. Clypeus about as wide as an anterior median eye. Anterior row of eyes a little recurved. Anterior median eyes much smaller than the laterals, not more than their radius apart and much closer to the laterals. Posterior median eyes and anterior laterals about equal in size, the posterior laterals larger. Posterior row of eyes slightly procurved. Posterior median eyes a little more than their diameter apart, a little nearer to the laterals. Lateral eyes on each side more than their radius but obviously less than their diameter apart. Tibiæ I and II armed beneath with three pairs of long spines, none of which are apical. Metatarsi I and II with two pairs of spines beneath. Furrow of posterior spiracle behind middle of abdomen. Epigynum as shown in pl. 4, f. 5.

Length, 6.5 mm. Length of cephalothorax, 2.5 mm. Length of tib. + pat. I, 2.6 mm.; of tib. + pat. IV, 2.7 mm.

Type—M. C. Z. 351. Cal.: Claremont. Wm. A. Hilton coll.

*Anyphæna incursa* sp. nov.

*Female*—Carapace dull yellow, darkened over the sides. Sternum, legs, endites and labium yellow. Chelicerae chestnut. Abdomen in general yellowish grey, with a dark stripe along each dorsolateral surface, the two stripes uniting at the spinnerets. Lower margin of furrow of chelicera bearing the usual series of seven or eight small teeth. Anterior row of eyes slightly recurved, the eyes not fully their diameter from the edge of the clypeus. Anterior median eyes only slightly smaller than the laterals, their radius or scarcely more apart and not more than half as far from the laterals. Lateral eyes on each side their radius or more apart. Posterior row of eyes procurved, longer than the first row by about twice the diameter of an eye; eyes subequal to each other and to the anterior laterals. Posterior median eyes nearly once and a half their diameter apart and about their diameter from the laterals. Tibia I armed beneath with two pairs of long slender spines, one pair being basal and one median. Metatarsus with one pair of spines beneath, these basal. Tibia II armed beneath with two unpaired spines corresponding to the posterior members of the pairs present on I. Metatarsus II with a pair of spines at base beneath. Posterior spiracle in front of middle of abdomen. Epigynum as shown in pl. 5, f. 2.

Length, 6.6 mm. Length of cephalothorax, 2.8 mm. Length of tib. + pat. I, 3.2 mm.; of tib. + pat. IV, 2.9 mm.

Type—M. C. Z. 350. Claremont. Pomona College Coll.

*Anyphæna mundella* sp. nov.

*Female*—Carapace yellow of pale brownish cast, a little darkened on the sides. Sternum yellow. Legs of same color as carapace. Abdomen above grey marked with numerous distinct dark dots, which show a tendency to be arranged in transverse series; venter paler, almost immaculate, reddish in front of genital furrow, the epigynum dark. Lower margin of furrow of chelicerae armed with a series of seven or eight small teeth which decrease in size proximad. Anterior row of eyes straight, each removed by more than its radius but less than its diameter from lower margin of clypeus. Anterior median eyes only very slightly smaller than the laterals, their radius or but little more apart but only slightly separated from the lateral on each side. Lateral eyes on each side about their radius apart. Posterior row procurved; eyes very nearly equal in size to the anterior laterals, subequal to each other or the medians scarcely smaller. Posterior median eyes once and a half their diameter apart, very nearly their diameter from the laterals. Tibiæ I and II and also metatarsi I and II each armed beneath with two pairs of long spines. Furrow of posterior spiracle at middle or slightly behind middle of abdomen. Epigynum as shown in pl. 5, f. 3.

*Male*—Palpal organ as shown in pl. 5 f. 4.

Length of female, 6.8 mm. Length of cephalothorax, 2.9 mm. Length of tib. + pat. I, 4 mm.; of tib. + pat. IV, 3 mm.

Type—M. C. Z. 348.

Cal.: Claremont. R. V. Chamberlin coll. Also Wm. A. Hilton coll., 1918.

*Inachemmis* gen. nov.

Cephalothorax similar in form to that of Chemmis. Anterior row of eyes nearly straight or a little recurved. Anterior median eyes smaller than the laterals. Posterior row of eyes much longer than the anterior row with eyes larger, the medians notably



exceeding the anterior medians, the row typically a little recurved. Area of median eyes narrower in front than behind where the width almost equals the length. Clypeus narrow, not exceeding the anterior eyes. Later eyes contiguous. Labium, endites and sternum essentially as in *Chemmis*, but the lower margin of the furrow of chelicerae armed with three teeth instead of two. The anterior tibiae bear similarly five pairs of long spines beneath; but the metatarsi bear three pairs instead of two. The posterior tibiae bear two median dorsal spines instead of wholly lacking these as in *Chemmis*.

*Genotype*.—*A. sober* sp. nov.

This genus appears also to include *Chemmis unicolor* of Banks from Arizona in addition to the two species here described. These species are more uniformly colored than the species of *Chemmis*; and, in having all markings nearly obliterated, contrast conspicuously in general appearance with the members of that genus.

*Anachemmis sober* sp. nov.

*Female*.—Carapace dusky over a brown to light chestnut ground. Legs light brown to light chestnut, without markings. Sternum light brown or testaceous. Labium and endites darker, pale across distal ends. Chelicerae chestnut. Abdomen dusky brown or blackish, with a median dorsal light line at base extending to near middle, a light spot on each side opposite each end and two or three pairs of light spots farther caudad, but these light marks commonly vague; venter paler, showing a yellowish background darkened by dark spots. Anterior row of eyes nearly straight; the median eyes much smaller than the laterals and especially than the posterior medians, their diameter apart and about half as far from the laterals. Posterior row of eyes a little recurved, eyes subequal; posterior median eyes about their diameter or a little more from the laterals, three-fourths or less their diameter apart. Epigynum as shown in pl. 5, f. 5.

Length up to 10.5 mm. Length of cephalothorax, 4.5 mm. Length of tib. + pat. I, 5 mm.; of tib. + pat. IV, the same.

Cal.: Claremont. R. V. Chamberlin. Paratypes from same region also in collection received from Prof. Hilton.

*Anachemmis dolichopus* sp. nov.

*Female*.—Contrasts in general appearance with the preceding species in its very long legs and much lighter color. The carapace, sternum and legs are yellowish brown without markings, but the legs are somewhat darkened over tibiae and distal joints. The abdomen is uniform grey throughout, with no definite markings. The anterior row of eyes slightly recurved; median eyes much smaller than the laterals, about their diameter apart, closer to the laterals. Posterior row of eyes straight; medians smaller than the laterals, about their diameter apart, nearly half as far again from the laterals. Legs very long. Readily distinguishable by the form of the epigynum as shown in pl. 5, f. 6.

*Male*.—Palpus shown in pl. 5, f. 7.

Length of female, 10 mm. Length of cephalothorax, 4.5 mm. Length of leg I, exclusive of coxae, 17 mm.; of tib. + pat. I, 6.5 mm.; of tib. + pat. IV, the same.

Type—M. C. Z. 344. Cal.: Claremont. Wm. A. Hilton coll.

*Namopsilus* gen. nov.

Cephalothorax with general form much as in *Trachelas*. Sternum broadly truncate anteriorly, pointed at caudal end, margined. Endites not excavated exteriorly, as broad at middle as at distal end; the distoectal corner rounded. Labium distally truncate or a little incurved. Lateral eyes on each side well separated, though much closer together than the anterior and posterior medians. Anterior row of eyes straight. Anterior medians smaller than the laterals. Posterior row of eyes slightly recurved, eyes equidistant or nearly so and nearly equal in size, with the laterals equal to the posterior laterals. Quadrangle of median eyes wider behind than in front. Clypeus much wider than the anterior eyes. Upper margin of furrow of chelicera with three large teeth, of which the median is longest; lower margin with a series of seven or eight teeth, of which the most proximal ones become reduced in size. None of the legs scopulate and all lacking terminal tenent hairs. Anterior tibiae armed beneath with four pairs of long spines, the metatarsi with three pairs. Posterior tibiae in middorsal line with a basal and a subapical spine, and each patella with a median spine at distal end above, these dorsal spines smaller than the laterals and ventrals.

*Genotype*.—*N. pletus* sp. nov.

*Namopsilus pletus* sp. nov.

*Female*.—Carapace chestnut colored, dusky over the sides, eye region, along striae and over clypeus. Legs light chestnut-brown; femora marked with two wide dark annuli, one at distal end and one submedian, these more or less interrupted above; patella with annulus about distal half also interrupted above; tibiae with two broad annuli, one at distal end and one between middle and base, these sometimes almost confluent; entire metatarsi dusky or obscurely biannulate. Sternum light chestnut, the coxae of legs lighter brown. Chelicerae dusky chestnut. Labium and endites pale across tips, elsewhere edark chestnut. Sides of abdomen deep brown or blackish, the dorsum with a series of dark chevron marks ending in the dark of the sides and connected along the middorsal line, the spaces between them on each side yellowish; venter grey. Clypeus twice as high as the diameter of an anterior lateral eye. Anterior median eyes much smaller than the laterals, about their diameter from each lateral eye and considerably farther from each other. Lateral eyes on each side about their radius apart. Posterior row of eyes a little recurved. Posterior median eyes scarcely smaller than the laterals, nearly once and a half their diameter apart and an equal distance from the laterals. Epigynum as shown in pl. 6 f. 1. The spermathecae, which ordinarily show through the integument as black bodies, are not represented in the figure.

Length, 6.5 mm. Length of cephalothorax, 4 mm. Length of tib. + pat. I, 4 mm.; of tib. + pat. IV, 3.7 mm.

Type—M. C. Z. 346. Cal. Clarendon (R. V. Chamberlin coll.; also Pomona College coll.).

## LYCOSID I

*Lycosa porcupina* sp. nov.

Carapace brown, paler in a supramarginal line on each side, below which the marginal dark band is interrupted, and in a median longitudinal stripe which narrows forward and projects in a point between the eyes and again expands between the first and second rows; a curved line well above of the median stripe just caudad of the eyes



Legs testaceous, without markings excepting tibia IV, which is banded at each end with black, and metatarsus IV, which is darkened at the extreme tip. Sternum, coxæ and abdomen beneath solid black. Labium and endites black, pale across tip. Chelicerae brown to bright chestnut. Abdomen above testaceous to yellow with a dark spear-shaped outline over basal part and ending on a chevron mark behind middle, this followed by a few other chevrons; a number of oblique lines extending out from basal mark on each side. A black band across each anterolateral corner and extending along the side where it breaks into streaks and spot; light areas of abdomen clothed with yellow hair. Upper margin of furrow of chelicerae armed with three teeth; the lower margin also with three teeth which are stout and subequal. Anterior row of eyes much shorter than the second, distinctly procurved, median eyes their radius or slightly less apart, an equal distance from the lateral eyes which are decidedly smaller, Lateral eyes scarcely their diameter from lower margin of clypeus, an equal distance from eyes of second row. Eyes of second row less than their diameter apart. Quadrangle of posterior eyes comparatively long, the cephalothorax being less than three and a half times as long.

Spines beneath tibiae long and distally very fine. Epigynum small, of form shown in pl. 6, f. 2.

Length, 16.5 mm. Length of cephalothorax, 8 mm. Length of tib. + pat. I, 6.6 mm.; of tib. + pat. IV, 7.5 mm. A male with cephalothorax 8 mm. long has tib. + pat. I, 8 mm. and tib. + pat. IV, 8.5 mm. long.

Cal.: Claremont. R. V. Chambrélin coll.

This species suggests *L. concolor* Banks of Lower California. It is a smaller species distinguishable in having tib. + pat. IV shorter than the cephalothorax instead of clearly longer; in having a black band at both ends of tib. IV instead of only at one end; in not having the femora, metatarsi and tarsi black beneath, etc.

*Pardosa tuoba* sp. nov.

*Female*—In the types the body is dark throughout, in life clothed with grey hair; the median dorsal stripe of carapace obscure. Legs black excepting tarsi and metatarsi, which are dull brown, the latter with three black annuli; sometimes the proximal joints also show the paler color in spots and streaks or in part may be somewhat annulate. Sternum solid black. Abdomen with integument black above excepting an obscure pale mark at base; also black laterally, but the venter paler though with a deep black band between epigynum and spinnerets; venter in life clothed densely with grey hairs, the dorsum with grey and reddish intermixed with some black. Anterior row of eyes slightly procurved, much shorter than the second row; median eyes their diameter apart, not fully half as far from the four-fifths as large laterals; the latter twice their diameter from the edge of the clypeus and decidedly more than their diameter from the eyes of second row. Eyes of second row fully their diameter, or slightly more, apart. Two first pairs of spines of anterior tibiae and metatarsi long, slender, overlapping as usual. Armature of chelicerae typical. Epigynum of the *sternalis* type, but with the expanded quadrate posterior end of septum completely filling the posterior cavity, or nearly so, as shown in pl. 6, f. 3.

Length, 6 mm. Length of cephalothorax, 3 mm. Length of tib. + pat. I, 2.8 mm.; of tib. + pat. IV, 3 mm.

Type—M. C. Z. 356. Claremont.

*Pardosa hesperella* sp. nov.

*Female*—Carapace with broad side stripes and narrower supramarginal stripes of chocolate-brown color, the marginal lines black, the eye region also dark; middorsal yellow stripe widest just caudad of eyes with anterior margin straight, from there narrowing caudad, divided anteriorly by a fine median longitudinal black line, the stripe only obscurely indicated between eyes. Sternum black. Legs with femora longitudinally streaked above with black, the joints not annulate or only in part very vaguely so. Abdomen with a yellow basal mark above, this narrow and widening caudad; this mark is edged with black and is followed behind by several black chevron lines; venter light, with no dark markings. Anterior row of eyes straight or nearly so, median eyes their diameter or a little more apart, about half as far from the laterals. Eyes of second row once and a half or more their diameter apart. The epigynum seems clearly distinctive in form. See pl. 6, f. 4.

Length, 7 mm. Length of cephalothorax, 3.5 mm. Length of tib. + pat. I, 3.2 mm.; of tib. + pat. IV, 3.5 mm.

Type—M. C. Z. 392.

Montana: W. M. Mann, collector.



PLATE 1

- Fig. 1. Left male palpus, ectal view, of *Nemesioides hespera*, sp. nov.
- Fig. 2. Left male palpus, ectal view, of *Parauximus tardatus* sp. nov.
- Fig. 3. Epigynum, not fully adult, of *Auximus pallescens* sp. nov.
- Fig. 4. Epigynum of *Auximus latescens* sp. nov.
- Fig. 5. Palpus of *Auximus latescens* sp. nov.

PLATE 2

- Fig. 1. Left male palpus, ectal view, of *Plectreureys suprenans* sp. nov.
- Fig. 2. Epigynum of *Drassodes celes* sp. nov.
- Fig. 3. Epigynum of *Scotophaeus voluntarius* sp. nov.
- Fig. 4. Epigynum of *Herpyllus pius* sp. nov.
- Fig. 5. Epigynum of *Zelotes taibo* sp. nov.
- Fig. 6. Left male palpus, ectal view, of *Zelotes irritans* sp. nov.

PLATE 3

- Fig. 1. Epigynum of *Zelotes gynethus* sp. nov.
- Fig. 2. Chelicera, ectal view, of *Psilochorus californiae* sp. nov.
- Fig. 3. Left male palpus, ectal view, of the same.
- Fig. 4. Epigynum of *Lithyphantes mimoides* sp. nov.
- Fig. 5. Epigynum of *Teutana grossa* (C. Koch), a species not uncommon at Claremont.
- Fig. 6. Epigynum of *Agelena pacifica*, var. Claremont.
- Fig. 7. Epigynum of *Agelena californica*, var. Claremont.
- Fig. 8. Epigynum of *Dictyna mians* sp. nov.

PLATE 4

- Fig. 1. Left male palpus, ectal view, of *Agelena rua* sp. nov.
- Fig. 2. Epigynum of *Olios schistus* sp. nov.
- Fig. 3. Left male palpus, ectal view, of *Olios schistus* sp. nov.
- Fig. 4. Male palpus, left ectal view, of *Anyphæna crebrispina* sp. nov.
- Fig. 5. Epigynum of *Anyphæna zina* sp. nov.

PLATE 5

- Fig. 1. Right male palpus, ectal view, of *Anyphæna ruens* sp. nov.
- Fig. 2. Epigynum of *Anyphæna incurva* sp. nov.
- Fig. 3. Epigynum of *Anyphæna mundella* sp. nov.
- Fig. 4. Left male palpus, ectal view, of the same.
- Fig. 5. Epigynum of *Anachemmis sober* sp. nov.
- Fig. 6. Epigynum of *Anachemmis dolichopus* sp. nov.
- Fig. 7. Right male palpus of the same.

PLATE 6

- Fig. 1. Epigynum of *Namopsilus pletus* sp. nov.
- Fig. 2. Epigynum of *Lycosa ferriculosa* sp. nov.
- Fig. 3. Epigynum of *Pardosa tuoba* sp. nov.
- Fig. 4. Epigynum of *Pardosa hesperella* sp. nov.
- Fig. 5. Epigynum of *Thanatus retentus* sp. nov.
- Fig. 6. Epigynum of *Aranea gosogana* sp. nov.

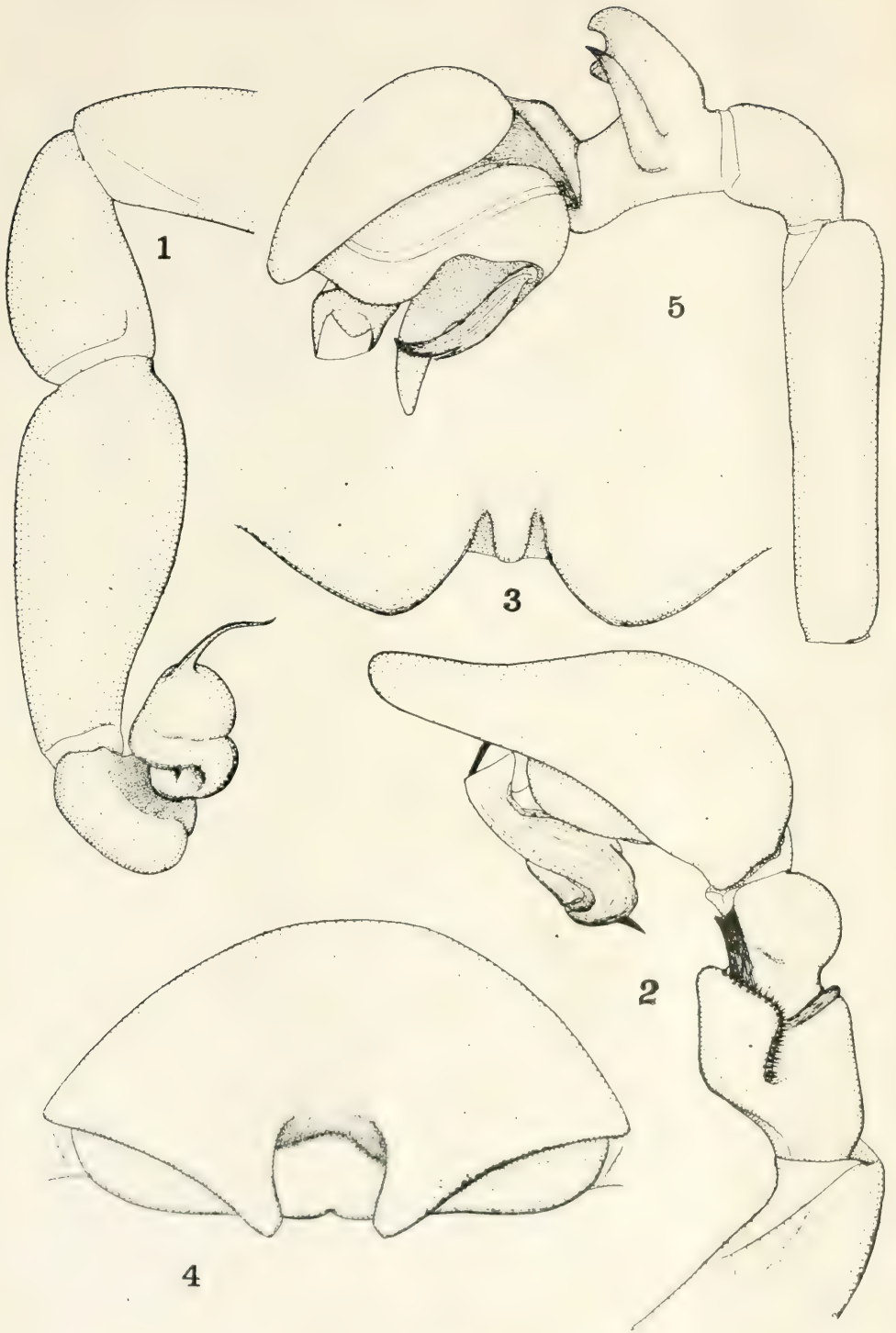


PLATE I



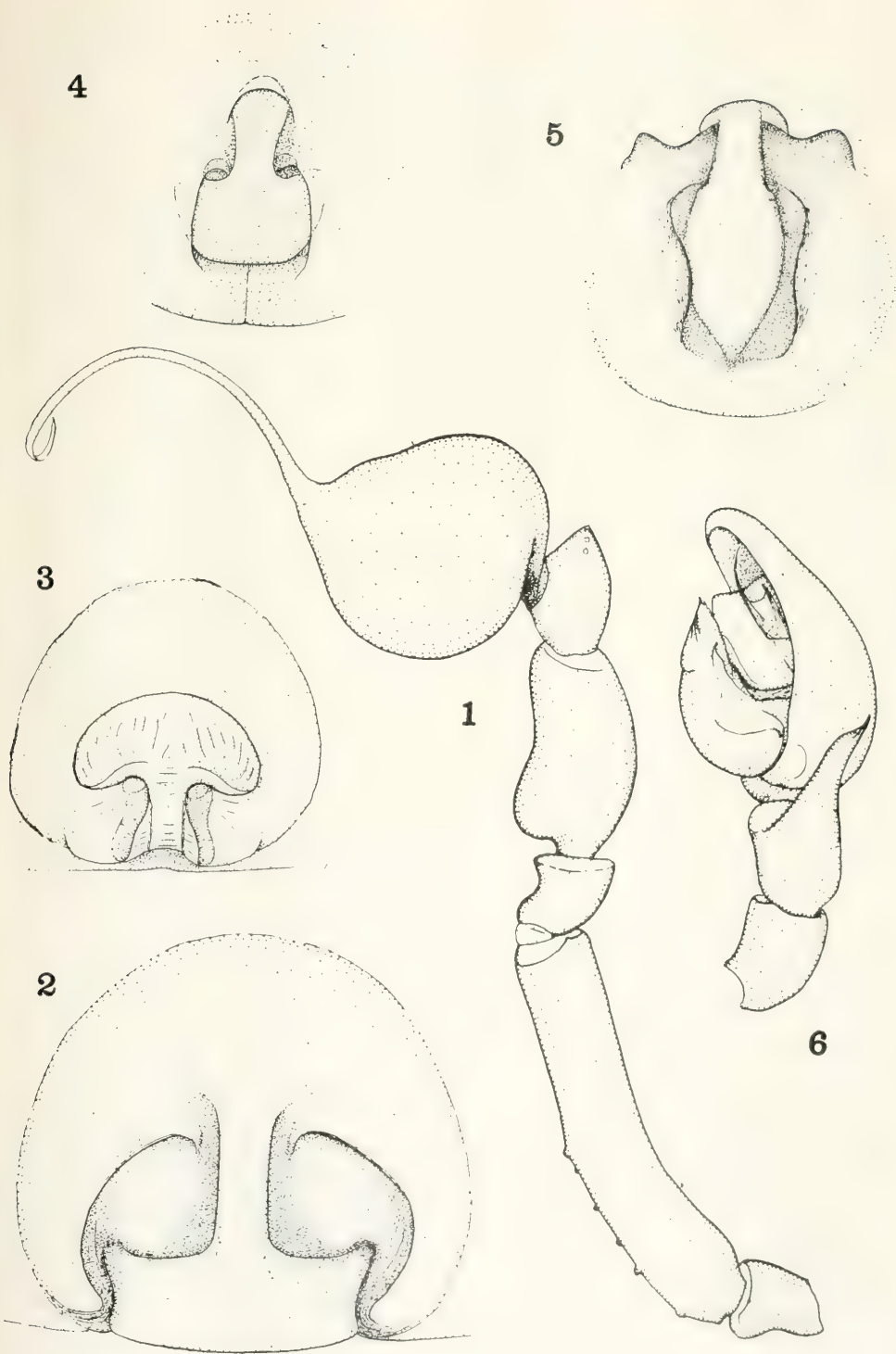


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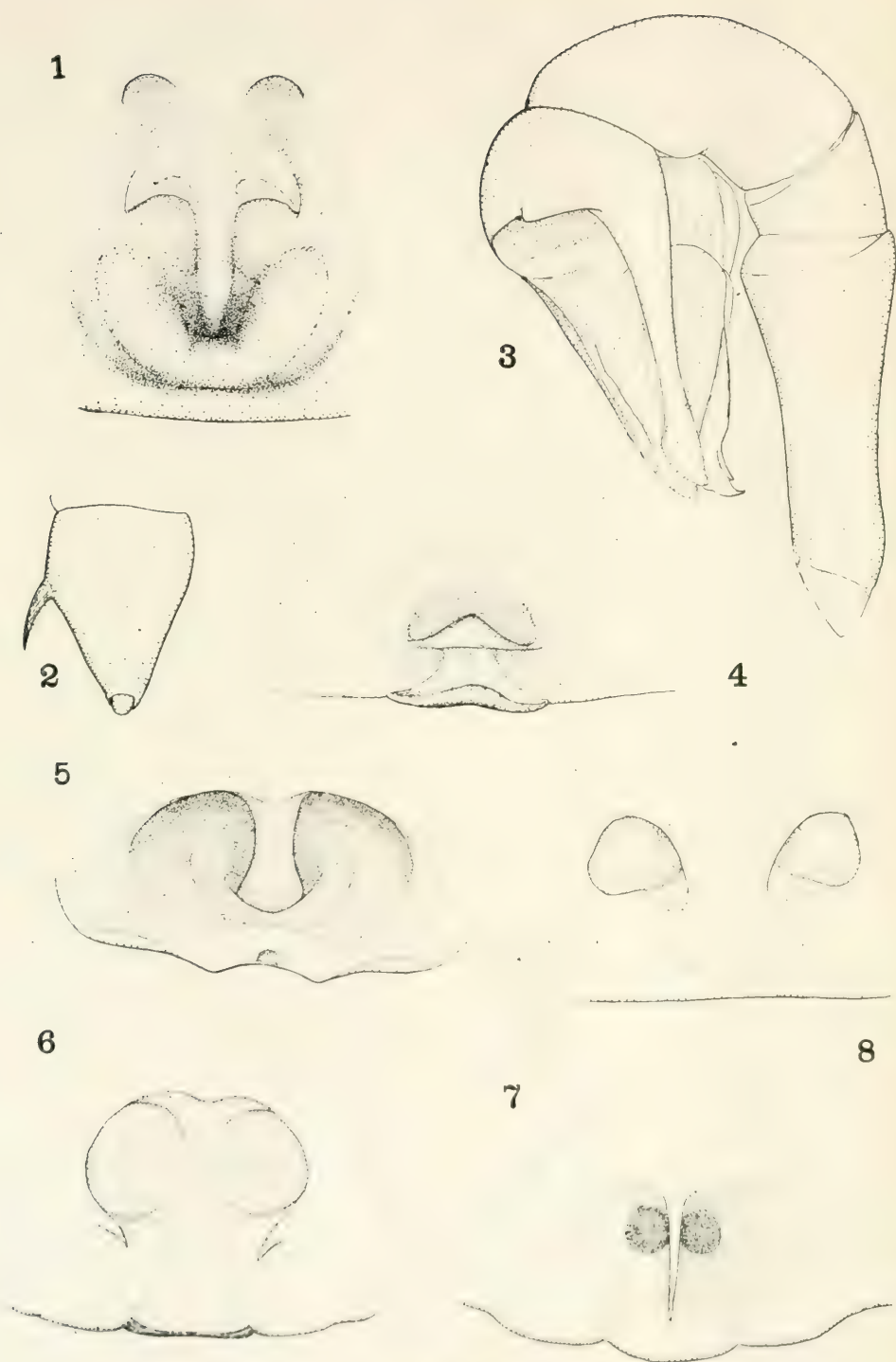
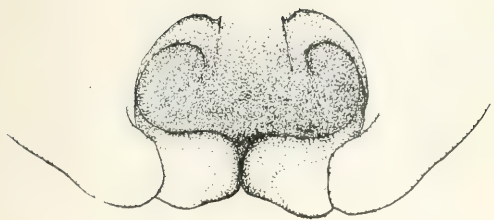


PLATE III



2



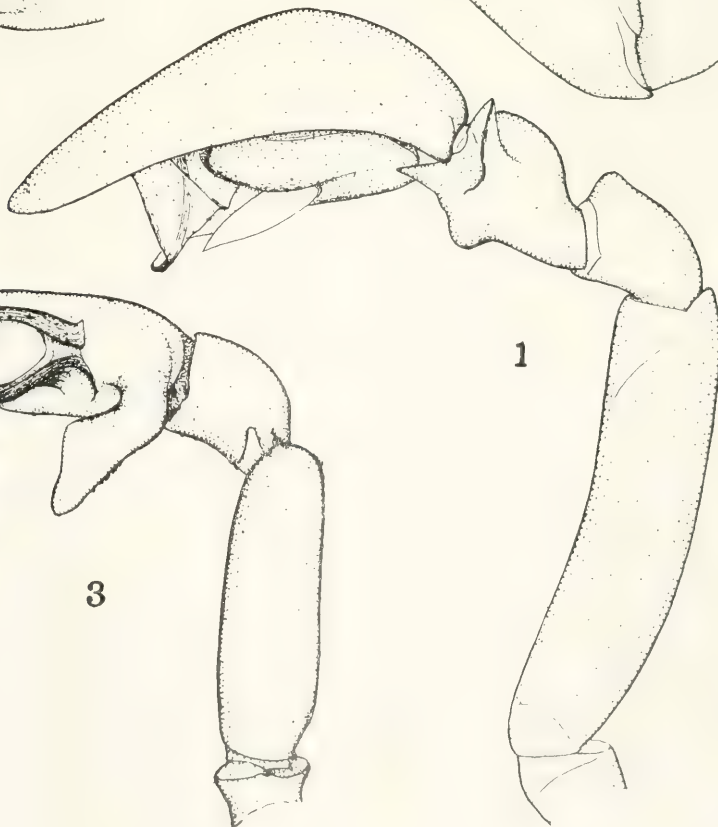
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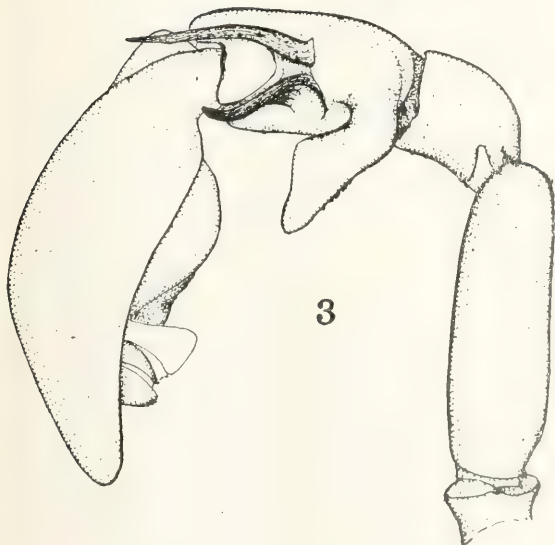
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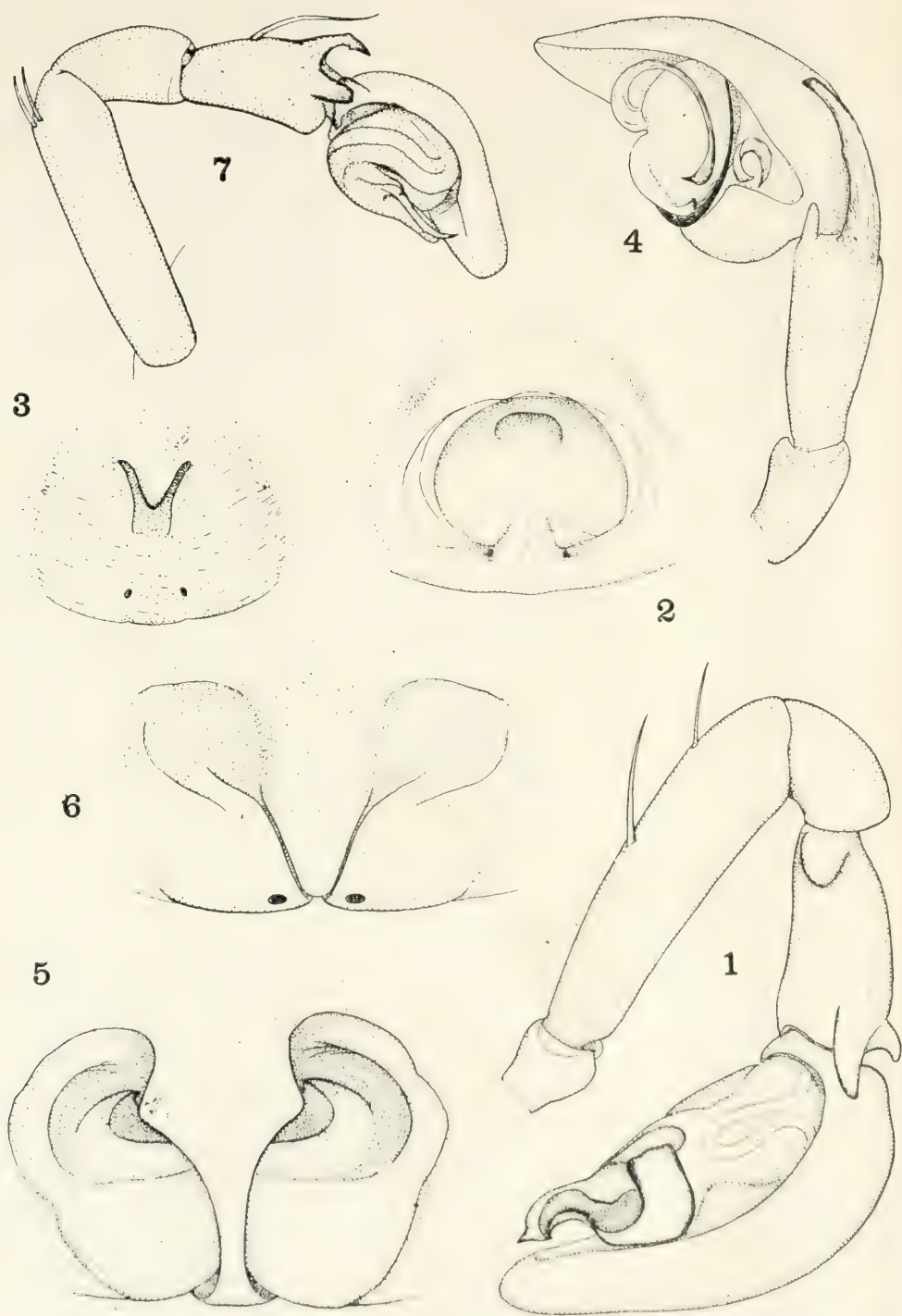


PLATE V



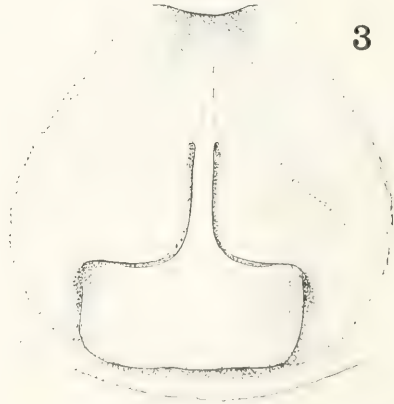
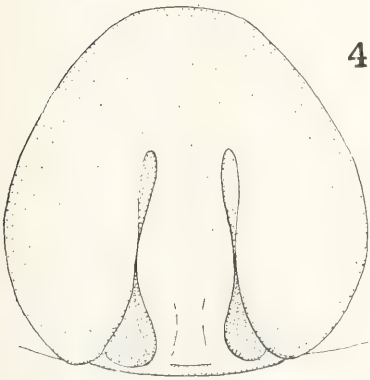
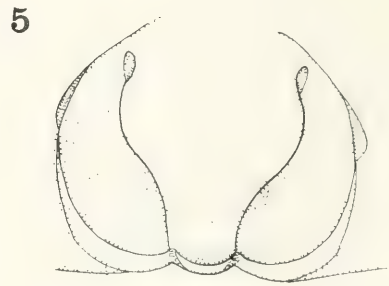
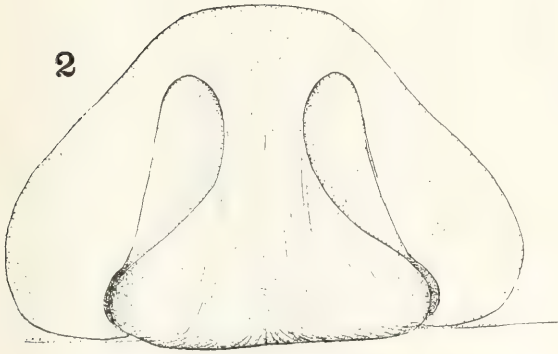
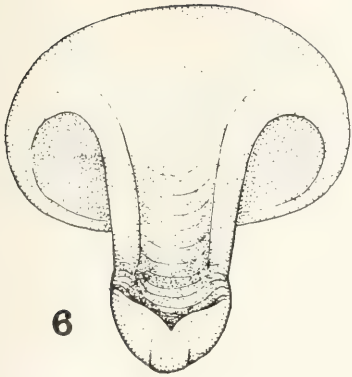


PLATE VI

# Centipedes and Millepedes from Near Claremont

Most of the specimens were collected during the past few years. All but the *Scutigera* were determined by Dr. R. V. Chamberlin.

## CENTIPEDES

### SCOLOPENDROMORPHA

*Scolopendra polymorpha* Wood. The largest local form and one of the most common.

*Otocryptops gracilis* (Wood). A smaller form which is also common.

### GEOPHILOMORPHA

*Clinopodes limatus* (Wood). A species more commonly listed under *Mecistocephalus* sens. lat.

*Nyctunguis heathi catalinae* (Chamb.)

*Linotenia laevipes* (Wood). This bright red species is found especially in the mountains.

*Geophilus rubens* Say.

*Geophilus regnans* Chamb. Very common.

*Arenophilus bipuncticeps* (Wood).

*Taiyuna occidentalis* (Meinert).

*T. claremontus* Chamb.

*Tabiphilus rex* Chamb.

*Notobius teniopsis* (Wood). A long species with 129 to 149 pairs of legs.

*Gosiphilus bakeri* Chamb.

*Gosiphilus laticeps* (Wood).

### SCUTIGEROMORPHA

*Scutigera forceps* Raf. From houses.

### LITHOBIOMORPHA

*Lamyctes pinampus* Chamb.

*Ethopolys xanti* (Wood).

*Gosibius paucidens* (Wood). Common.

*Arebius elysianus* Chamb.

*Nothembius nampus* Chamb.

*Pokabius clavigerens* Chamb.

## MILLEPEDES

The species described by Chamberlin were described in the Proceedings of the Biological Society of Washington in December, 1918, Vol. 31, pp. 165-170.

*Parajulus furcifer* Hag.

*Tylobolus claremontus* Chamb.

*Hiltonius pulchrus* Chamb.

*Atopetholus californicus* Chamb.

*A. parvus* Chamb.



# Spiders from the Claremont-Laguna Region

The following is a list of spiders collected during the past few years. All the determinations were made for us by Dr. R. V. Chamberlin. None of the new species recently described by Chamberlin are included in this list.

## AVICULARIIDÆ

*Bothriocyrtum californicum* (Camb.)

## ULBORIDÆ

*Uloborus californicus* Bks. Uplands, 1200 ft. Nicholson.

## DICTYNIDÆ

*Dictyna calcarata* Bks.

## SCYTODIDÆ

*Plectreurus castanea* Sim.

## DRASSIDÆ

*Zelotes maculata* Bks.

*Herpyllus validus* Bks.

*H. angustus* Bks.

## PHOLCIDÆ

*Physocyclus globosus* Tac. Uplands Nicolson.

*Pholcus phalangoides* Fuessl.

## AGELENIDÆ

*Agelena pacifica* Bks.

*A. californica* Bks. Claremont and interior of Catalina.

*A. nœvia* Hentz. Claremont and Avalon, Catalina.

*Tegenaria domestica* Clerck.

*T. californica* Bks.

*Chorizomma californica* Simon.

## LINYPHIIDÆ

*Linyphia* Sp.

## ARGIOPIDÆ

*Cyclosa conica* Pallas. Cucamonga Mt. 4500 to 5500 ft. Johnston.

*Aranea miniata* Walck.

*A. curcurbitina* Clerck.

*A. marmorea* Clerck.

*A. angulata* Clerck.

*Metargiope trifasciata* Forsk.

*Zilla X-notata* Clerck.

*Tetragnatha laboriosa* Hentz.

## THERIDIIDÆ

*Teutana grossa* C. Koch.

*Latrodectus mactans* Fabr.

*Theridion tepidariorum* Koch.

## THOMISIDÆ

*Thanatus coloradensis* Keys.

*Xysticus californicus* Keys.

*X. ferox* Hentz.

*Misumena vatia* Clerck.

*Misumenoides aleatorius* Hentz.

*Misumenops asperatus* Hentz.

*Philodromus pernix* Black.

*P. moestus* Bks.

## CLUBIONIDÆ

*Chiracanthium inclusum* Hentz.

*Trachelas tranquilla* Hentz. Claremont and Catalina.

*Castianeira pacifica* Bks.

*Gayenna* Juv.

*Anyphoena* Juv.

## LYCOSIDÆ

*Lycosa kochii* Keys. Claremont and Ontario Mt. 6000 to 7000 feet.

*Lycosa*, near *carolinensis*, not quite mature.

*Pardosa sternalis* Thorell.

*P. lapidicina* Em.

*P. californica* Keys.

*Pardosa* sp. Catalina interior. Claremont.

# Central Nervous System of *Mytilus Californianus*

WILLIAM A. HILTON

The cerebral ganglia are well separated from each other, but the smallest of the three groups of ganglia in the nervous system. A large cephalic branch goes to the palps, smaller lateral ones supply adjacent parts in the mouth region. No attempt was made at this time to follow peripheral branches very far.

The single mass of the pedal ganglion may be easily seen to be composed of a right and a left half. The pedal connections with the main trunk are somewhat smaller than the long connectives and hardly larger than some of the other branches of the ganglion, notably the large lateral caudal branches. The caudal branches of the pedal are chiefly three on each side, the more lateral being very large and the medial the smallest. They penetrate and supply the foot and viscera.

The visceral ganglia are more widely separated than the cerebral and much larger. The large caudal branches pass over the posterior adductor muscles to become supplied to the muscle and to the mantle. The smaller lateral branch runs out laterally dividing soon into two to supply the gills.

In the cerebral ganglion the fibers form a broad connection across the middle line. There are a few cells along the course of the commissure. Nerve cells are found inclosing the central fibrous mass. The cells are three or four layers thick except at certain places where there are none. The cells are of several sorts: First—those that stain deeply with hematoxylin. Some of these may be neuroglia cells, they are rather small cells and some seem to have very little cell body; second—large cells with clear protoplasm with distinct fibrillar structure. The processes of these are long, in some cases may be followed for some distance; third—there are some very small cells that do not stain deeply. These may some of them be neuroglia cells, others may be nerve cells in some special physiological condition.

In the fibrous areas of the ganglia, larger and smaller strands are evident, with only a few cells in central portions.

The cell areas about the cerebral ganglion differs slightly at various points, but there is no marked massing into groups.

The pedal ganglion, like the cerebral, has a central fibrous core covered with a rather even mass of cells of large and small size, but the cephalic and caudal regions have the thicker masses of cells. The ventral sides of the pedal has more cells than the dorsal. Two sides of the ganglion are well marked from each other, although broadly connected by fibers.

The large visceral ganglia are more complicated in structure than the others, but a similar general arrangement of cells is found.

The peripheral distribution of nerves was not followed at this time. For the general anatomy of bivalves one of the most recent works gives a detailed account of peripheral distribution in a bivalve:

Splittstosser, P., 1913.

Zur Morphologie des Nervensystems von *Anodonta cellensis* Schrot. Zeit. f. wiss. zool. Bd. CIV 3 heft.

*(Contribution from the Zoological Laboratory of Pomona College.)*



## Explanation of Figures

Fig. 1. Central ganglia of *Mytilus*. The cerebral ganglia are above in the figure. X6.

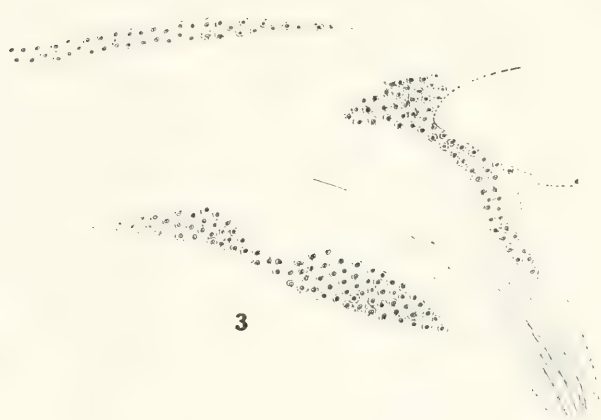
Fig. 2. Longitudinal section of the cerebral ganglion of *Mytilus*. The connective end is down. X70.

Fig. 3. Cross section of the cerebral ganglion of *Mytilus*. The dorsal side is up. X70.

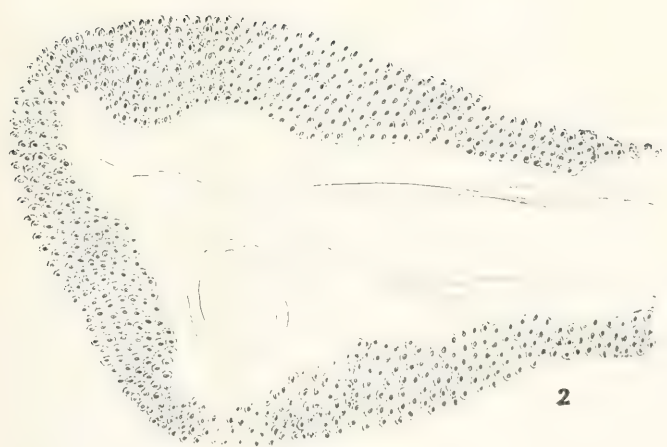
Fig. 4. Cross section of the pedal ganglion of *Mytilus*. The dorsal side is up. X70.



4



3



2



1

# Notes on the Sipunculida of Laguna Beach

RALPH V. CHAMBERLIN

The following notes and provisional diagnoses are based upon a collection of Sipunculids made by Prof. Hilton at Laguna Beach in 1917. Six species are represented.

## SIPUNCULUS NUDUS LINN.

One specimen of this widespread species was taken on the sand flats at low tide in August, Balboa. As preserved it is 26 cms. long. Attachments of nephridia and retractor muscles normal. The usual 31-32 longitudinal muscle bands. The body appears to be pigmented to some extent, as has also been recorded for a specimen from the Malacca region described as dark brown (Selenka), and one from Key West (Gerould). The species is known from various parts of the Atlantic along both shores, from the Mediterranean, Adriatic and Red seas, Malacca, Bismarck Archipelago, Philippines and Japan.

## PHYSCOSOMA AGASSIZII (KEFERSTEIN)

In the collection are six specimens of this well-marked species taken at low tide on sand flats at Balboa and Laguna Beach. The species is otherwise known to occur along the California coast (e. g., at Monterey Bay, Mendocino, San Francisco, Crescent City) and northward (Vancouver Id.) as well as southward (Puntarena, Panama). It has also been taken at Loyalty Is., Ceylon, Laccadives and Maldives, and in the Atlantic on the coasts of the United States and Africa.

## DENDROSTOMA ZOSTERICOLA SP. NOV.

This species belongs to the group with but two retractor muscles. These have their origins in the posterior third of the body (in the type about 10 mm. from caudal end) and are well developed throughout and free to near insertions. The nephridia open at the level of the anus and are elongate and free. Contractile tube with numerous caeca. Tentacles strongly dendritic or arborescent, the terminal branches numerous. Introvert wholly lacking hooks. Skin brown or in part grey, set off into numerous areas, these transversely elongate in middle region, in the posterior more rectangular and longitudinally elongate. Entire body and introvert, excepting a short area proximad of tentacles, bearing moderately numerous, small, dark and rounded elevations which do not rise into true papillae; usually one of these to each cuticular area; of uniform size and abundance throughout. Body typically narrowed at both ends, fusiform. 35 mm. long behind anus and about 15 mm. to distal end of introvert.

Taken in eel-grass in September, 1917.

Type—M. C. Z. 2, 181.

## DENDROSTOMA MYTHICA SP. NOV.

The type of this species was found in eel-grass (*Zostera*) in the same original lot with the types of the preceding species. It is a smaller species of obviously different form. The body is widest at the posterior end, followed by a much longer, narrower,



subcylindrical portion extending to the still narrower introvert proper. The species is like *zostericola* in lacking hooks on the introvert, but differs obviously in the character and arrangement of the tubercles. These are similarly small over the general body but are more closely arranged over the middle region than over the broader posterior one, while particularly characteristic is a band of abruptly much larger tubercles about the base of the introvert, distad of which region they become again abruptly smaller. The color is brown. The two retractors are inserted at the anterior end of the broad posterior region and are fused anteriorly, their free portions short. Nephridia free.

Length of body behind anus, 12 mm.; in front of this to base of tentacles, near 8 mm.

Type—M. C. Z. 2, 184.

DENDROSTOMA PYROIDES SP. NOV.

Differing conspicuously from *zostericola* in form, being broadest at the posterior end and as a whole subpyriform instead of conspicuously fusiform. It is darker brown in color. A conspicuous external difference is in having the introvert, or proboscis, armed on its median portion with numerous, comparatively large, dark hooks, which are not definitely seriate. The cuticle in general is covered with numerous small, dark, rounded elevations which in surface view are circular to slightly elliptic in outline and are larger in size at the base of the proboscis and at the posterior end of the body than elsewhere. Tentacles arborescently branched, the terminal branches numerous, finger-like. The two retractors are stout bands taking their origin in the posterior third of the body. Contractile tube with fewer caeca. Nephridia free, opening a little farther forward than the anus.

Length from anus to caudal end, 17 mm.; from anus to base of tentacles, 8 mm.

Taken at low tide on Laguna Beach.

Type—M. C. Z. 2, 182.

PHASCOLOSOMA HESPERA SP. NOV.

Somewhat resembling *P. procerum* in form, but with the proboscis more abruptly set off from the body and on the average narrower and especially much longer relatively to the latter. In the type the body proper is 8.5 mm. long, while the proboscis is 52 mm. long, i. e., about six times longer than the body, while in one paratype it is as much as 7.5 times longer. The body of the type is 2.6 mm. thick and the proboscis half or less than half this thickness. Body proper pointed at both ends, broadly subfusiform. The skin at the caudal end of the body is rather thickly studded with papillae, which are disally flat and dark colored over a pale and often constricted base. The papillae rapidly become fewer and more widely scattered over the middle and anterior regions of the body and over the proboscis, and at the same time become decidedly smaller and are often borne singly on low, rounded elevations; on the proboscis the epapillae are typically colorless. The two retractor muscles in the type have their origins in the anterior part of the body.

The type was secured in sand at Balboa, December 26, 1917. Paratypes from eel-grass on Laguna Beach, September, 1917.

Type—M. C. Z. 2, 185.



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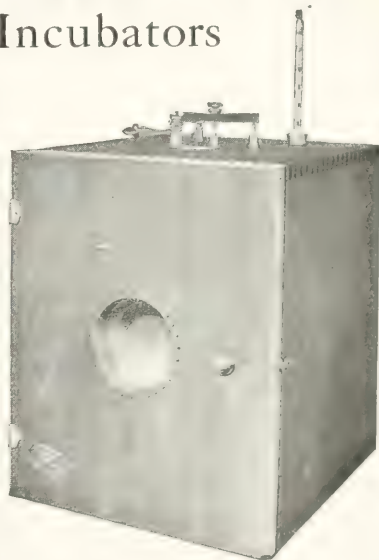
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